

Article 19 entered

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
 Organization
 International Bureau



(43) International Publication Date
 17 June 2004 (17.06.2004)

PCT

(10) International Publication Number
WO 2004/050786 A3

(51) International Patent Classification⁷: **C07C 67/00**,
 67/02

(21) International Application Number:
 PCT/US2003/037411

(22) International Filing Date:
 21 November 2003 (21.11.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
 60/429,630 27 November 2002 (27.11.2002) US

(71) Applicant (for all designated States except US): **STEPAN
 COMPANY** [US/US]; 22 West Frontage Road, Northfield,
 IL 60093 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HUTCHINSON,**
John, Christopher [US/US]; 6315 N. Wayne Ave. #3,
 Chicago, IL 60660 (US). **LEE, Jungsik** [US/US]; 2936
 Greenleaf Ave., Wilmette, IL 60091 (US). **FIGLEY,**
Timothy, M. [US/US]; 431 Brentwood Court, Roselle, IL
 60172 (US). **KRUEGER, Robert, A.** [US/US]; 2512 N.
 Bosworth #3306, Chicago, IL 60614 (US).

(74) Agent: **WIMBISCUS, Thomas, J.**; McAndrews, Held
 & Malloy, LTD., 34th Floor, 500 West Madison Street,
 Chicago, IL 60661 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
 AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR,
 CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
 GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
 KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,
 MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,
 SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
 UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (BW, GH,
 GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
 Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
 European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
 ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
 SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
 GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the
 claims and to be republished in the event of receipt of
 amendments

(88) Date of publication of the international search report:
 5 August 2004

For two-letter codes and other abbreviations, refer to the "Guid-
 ance Notes on Codes and Abbreviations" appearing at the begin-
 ning of each regular issue of the PCT Gazette.



WO 2004/050786 A3

(54) Title: METHOD OF MAKING METHYL ESTER SURFACTANTS

(57) Abstract: A method of making a methyl ester based surfactants is provided. The method includes the transesterification or esterification of a methyl ester feedstock and a poly(alkyl ether) feedstock.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/37411

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C07C 67/00, 67/02

US CL : 554/124; 560/263

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 554/124; 560/263

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	COX et al, Methyl Ester Ethoxylates, Journal of the American Oil Chemists Society 1997, Vol 74, No. 7, pages 847-859, see page 848, SCHEME 1 and page 847, column 2, top, FIG 1.	1-3

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

05 May 2004 (05.05.2004)

Date of mailing of the international search report

18 JUN 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703)305-3230

Authorized officer

Paul A. Zucker

Telephone No. 703-308-1235

INTERNATIONAL SEARCH REPORT

PCT/US03/37411

Continuation of B. FIELDS SEARCHED Item 3:

CAS ONLINE

search terms: structures, methyl ester

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
17 June 2004 (17.06.2004)

PCT

(10) International Publication Number
WO 2004/050786 A3

(51) International Patent Classification⁷: **C07C 67/00**,
67/02

(21) International Application Number:
PCT/US2003/037411

(22) International Filing Date:
21 November 2003 (21.11.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/429,630 27 November 2002 (27.11.2002) US

(71) Applicant (for all designated States except US): **STEPAN
COMPANY** [US/US]; 22 West Frontage Road, Northfield,
IL 60093 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HUTCHINSON,
John, Christopher** [US/US]; 6315 N. Wayne Ave. #3,
Chicago, IL 60660 (US). **LEE, Jungsik** [US/US]; 2936
Greenleaf Ave., Wilmette, IL 60091 (US). **FIGLEY,
Timothy, M.** [US/US]; 431 Brentwood Court, Roselle, IL
60172 (US). **KRUEGER, Robert, A.** [US/US]; 2512 N.
Bosworth #3306, Chicago, IL 60614 (US).

(74) Agent: **WIMBISCUS, Thomas, J.**; McAndrews, Held
& Malloy, LTD., 34th Floor, 500 West Madison Street,
Chicago, IL 60661 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR,
CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,
MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,
SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (BW, GH,
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE,
SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA,
GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- with amended claims

(88) Date of publication of the international search report:
5 August 2004

Date of publication of the amended claims: 28 October 2004

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: METHOD OF MAKING METHYL ESTER SURFACTANTS

(57) Abstract: A method of making a methyl ester based surfactants is provided. The method includes the transesterification or esterification of a methyl ester feedstock and a poly(alkyl ether) feedstock.

WO 2004/050786 A3

10/534244
JC17 Rec'd PCT/PTO 09 MAY 2005

PCT/US03/37411

AMENDED CLAIMS

[Received by the International Bureau on 18 August 2004 (18.08.04):
original claims 1-3 replaced by amended claims 1-24]

WHAT IS CLAIMED IS:

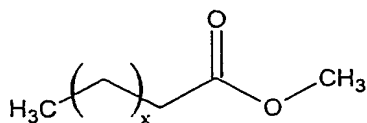
1. A method of making a methyl ester based surfactants comprising the steps of

providing a methyl ester feedstock comprising a methyl ester component having a general structure of the form $R-C(O)OR'$ where R is an organic moiety and can be saturated or unsaturated, branched or linear, contain from two to twenty-four carbons, and R' can be H or organic;

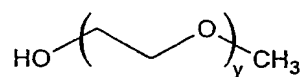
providing a poly(alkyl ether) feedstock comprising a poly(alkyl ether) component having a general structure of the form $HO(R''O)_yR'''$, where R'' is an organic moiety, can be saturated or unsaturated, branched or linear, and containing from one to six carbons, y ranges from one to 200, R''' is either H or an organic moiety that can be saturated or unsaturated, branched or linear, and contain from one to twelve carbons;

and reacting the methyl ester feedstock with the poly(alkyl ether) feedstock.

2. The method of claim 1 wherein the methyl ester feedstock has the following structural formula:



where x is 0 to 22.



3. The method of claim 1 wherein the poly(alkyl ether) feedstock has the following structural formula:

where y is 1 to 200.